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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,404	02/23/2004	Colin P. Crowley	77051	1820
48940	7590	02/16/2006		
FITCH EVEN TABIN & FLANNERY 120 S. LASALLE STREET SUITE 1600 CHICAGO, IL 60603-3406			EXAMINER ARNOLD, ERNST V	
			ART UNIT	PAPER NUMBER
			1616	

DATE MAILED: 02/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/784,404	Applicant(s) CROWLEY ET AL.	
	Examiner Ernst V. Arnold	Art Unit 1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 9-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/23/2005</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-8, are drawn to an electrodialysis method, classified in class 514, subclass 758.
- II. Claims 9-22 are drawn to an electrodialyzed composition, classified in class 424, subclass 455.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by simply adding ingredients that have a total cation concentration of 1.0 N or less, individual cation concentration of 0.6 N or less, a free chlorine content of 1 ppm or less and adjustment of the pH of 5.0 or less to produce the solution.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification and would present a burden of search on the Examiner, restriction for examination purposes as indicated is proper.

During a telephone conversation with Debbie Wright on 01/24/06 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-8. Affirmation of this election must be made by applicant in replying to this Office action. Claims 9-22 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims that depend from or otherwise include all the limitations of the allowable product claim will be rejoined in accordance with the provisions of MPEP § 821.04. **Process claims that depend from or otherwise include all the limitations of the patentable product** will be entered as a matter of right if the amendment is presented prior to final rejection or allowance, whichever is earlier. Amendments submitted after final rejection are governed by 37 CFR 1.116; amendments submitted after allowance are governed by 37 CFR 1.312.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103, and 112. Until an elected product claim is found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowed product claim will not be rejoined. See "Guidance on Treatment of Product and Process Claims in light of In re Ochiai, In re Brouwer and 35 U.S.C. § 103(b)," 1184 O.G. 86 (March 26, 1996). Additionally, in order to

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retain the right to rejoinder in accordance with the above policy, Applicant is advised that the process claims should be amended during prosecution either to maintain dependency on the product claims or to otherwise include the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Applicant is advised to but a space between the numeric value and units throughout the claims. For example: "1.8N" should be written as "1.8 N".

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 6 recites "...a pH or 8.0 or greater." It is unclear to the Examiner if Applicant intended to include another variable. Claim 7 is rejected as being dependent on an indefinite claim. For purposes of examination the Examiner will interpret the claim as if it was a typographical error and Applicant intended to the claim to recite: "...a pH of 8.0 or greater."

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Mani (US 6,221,225).

Instant claim 1 is drawn to: An electrodialysis method comprising: contacting an aqueous solution having a total anion or total cation concentration of 1.8N or less with a membrane electrodialysis system, the membrane electrodialysis system comprising at least one bipolar membrane in between a plurality of cationic membranes or a plurality of anionic membranes, a cathode electrode, and an anode electrode when all of the membranes are disposed between the cathode electrode and the anode electrode; applying an electrical potential across the anode electrode and cathode electrode for a time effective for changing the pH of the aqueous solution by at least 2.0 and providing an electrodialyzed composition having a total anion or total cation concentration of 1.0N or less, individual cation or anion concentrations of 0.6N or less, and a free chlorine content of 2 ppm or less.

Mani discloses an apparatus and process for electrodialysis of salts comprising a membrane electrodialysis system wherein a bipolar membrane is in between a plurality of cationic membranes which are between a cathode electrode and an anode electrode (Abstract; Figure 6; column 14, lines 39-column 15, line 8 and claims 1-21, for example). A method of electrodialysis is provided wherein a pH change from 5.8 to 2.86 is observed and the concentration total cations of the initial aqueous solution is 1.8 N or less (pH = 5.8) and the concentration of the total cations of the resulting solution is less

than 0.6 N (pH = 2.86) (Column 16, lines 20-43 and Table 1). Free chlorine is not present and thus is less than 2 ppm. Claims 1-4 are deemed to be anticipated by Mani.

Claim Rejections - 35 USC § 102

Claims 1-5 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Quoc et al. (J. Agric. Food Chem. 2000, 48, 2160-2166).

Quoc et al. disclose methods of electrodialysis with bipolar membranes, sandwiched between cationic and anionic membranes, of apple juice (Abstract; and pages 2160-2161, materials and methods, Figure 1). Figure 1 also shows that in the case of cationic membranes, 0.25 M KCl is used and, in the case of anionic membranes, 0.1 M HCl is used. The acidified juice had a total cation concentration of: potassium 774 mg/L (0.019 M); calcium 22 mg/L (0.005 M); and magnesium 35 mg/L (0.001 M) (Page 2164, Table 3). The current density, 20 mA/cm² or 40 mA/cm², was selected not to exceed 2 V per compartment and ranged from 1.5 to 1.8 V (Page 2161, left column, second paragraph and page 2163, right column, second paragraph). Free chlorine was not present. A pH change of at least 2, from between 3.5 and 4.0 to between 5.5 and 6.0, and between 3.0 and 3.5 to between 1.0 and 1.5 is shown in Figure 4 where 8 bipolar membranes were used (Page 2163, Figure 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Quoc et al. (J. Agric. Food Chem. 2000, 48, 2160-2166) in view of Hatzidimitriu (US 4,936,962).

The reference of Quoc et al. is discussed in detail above and that discussion is hereby incorporated by reference. Quoc et al. teach methods wherein the electrodialed composition has: Cl^- 580 mg/L (0.016 M) and malic acid 7.6 g/L (0.05 M) and no free chlorine but the pH is acidic.

Quoc et al. do not expressly disclose a method wherein the electrodialed composition has a total anion concentration of 0.5 N or less, individual anion concentration of 0.3 N or less, a free chlorine content of 2 ppm or less and a pH of 8.0 or greater or the limitation of an electrodialed composition that has a total anion concentration of 0.1 N or less and individual anion concentrations of 0.04 N or less.

Hatzidimitriu teaches a process for increasing or decreasing the acidity of an aqueous flowable fluid, such as fruit juices, by electrodialysis in a cell containing a bipolar membrane between ion selective membranes (Abstract; column 2, lines 46-50; column 3, lines 49-67; Figure 3 and claims 1-6, for example).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to decrease the acidity to a pH of 8.0 or greater in the method of Quoc et al. and produce the instant invention.

One of ordinary skill in the art would have been motivated to do this because Hatzidimitriu teach that the taste of products can be improved, the viscosity can be modified, the color and protein stability can be enhanced and microbial spoilage can be controlled (Column 1, lines 12-16). It is deemed within the purview of one of ordinary skill in the art to select the proper pH range to maximize these desirable characteristics in any given solution.

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the claimed invention, as a whole, would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, because every element of the invention and the claimed invention as a whole have been fairly disclosed or suggested by the combined teachings of the cited references.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 4,549,946 teaches a process for electrodialysis using a bipolar membrane between a plurality of anionic membranes. US 5,397,445 teaches a method of producing an acid and/or an alkali metal hydroxide from a neutral salt by

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electrodialysis employing a bipolar membrane and an anion exchange membrane and/or a cation exchange membrane.


No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernst V. Arnold whose telephone number is 571-272-8509. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sreeni Padmanabhan can be reached on 571-272-0629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EVA



JOHN PAK
PRIMARY EXAMINER
GROUP 1600